DIVISION OF ENVIRONMENTAL QUALITY

Proposed Plan for

Groundwater Contamination (Operable Unit 1-07B) and No Action Sites (Operable Units 1-01, -02, -06, -09), Test Area North, Idaho National Engineering Laboratory

Idaho National Engineering Laboratory

Public Comment Period – May 18 to June 17, 1994

[**Note**: This proposed plan discusses investigations and agency recommendations for two types of projects at the Test Area North facility: (1) a remedial investigation/feasibility study of groundwater contamination affecting the Snake River Plain Aquifer, pages 3-12; and (2) preliminary investigations for 31 areas of suspected, and in some cases confirmed contamination, which do not affect the Snake River Plain Aquifer, pages 12-22. Technical and administrative terms are used throughout this plan. When they are first used, they are printed in ***bold italics***. Explanations of these terms, document references, and other helpful notes are provided in the margins.]

Inside this Plan

Mall/Library Public Meetings*

Idaho Falls–*Grand Teton Mall, Community Room, Monday, June 6, 1994*

Boise–*Boise Public Library Auditorium, Wednesday, June 8, 1994*

Moscow–*Palouse Empire Mall (Former House of Fabrics, Thursday, June 9, 1994*

***See page 22 for details**

Briefings

Pocatello/Twin Falls
Display information and briefings may be requested by calling regional INEL offices listed on page 22

Introduction

The purpose of this ***Proposed Plan*** is to summarize information and seek public comment on (a) the remedial alternatives proposed for reducing contamination in the groundwater and (b) a group of other sites that were evaluated and recommended for no further action by the U.S. Department of Energy Idaho Operations Office (DOE-ID), U.S. Environmental Protection Agency (EPA) Region 10, and the Idaho Department of Health and Welfare (IDHW). Hereinafter, DOE, EPA, and IDHW will be referred to as "the agencies." These sites are at Test Area North (TAN), in the northern portion of the Idaho National Engineering Laboratory (INEL; Figure 1).

Organic and radionuclide contaminants have been detected in the Snake River Plain Aquifer at TAN at concentrations greater than safe drinking water standards. The Technical Support Facility (TSF) injection well is the primary source of contaminants to the groundwater. The agencies implemented an ***interim action*** [designated as ***Operable Unit*** (OU 1-07A)] to reduce contamination at the injection well while investigating the larger groundwater plume (OU 1-07B). The first part of this proposed plan addresses OU 1-07B, which is defined as that part of the groundwater beneath TAN that has, or is expected to have, concentrations of trichloroethene (TCE) above the drinking water standard of 5 ***parts per billion*** (ppb). The proposed group of no action sites is presented second and consists of miscellaneous contamination, tanks, old land disposal units, and soil contamination.

Agency Involvement

E, in conjunction with EPA and IDHW, developed and issued this Proposed Plan to fulfill requirements of Section 117 (a) of the Comprehensive Environmental Response, Compensation, and Liability Act (***CERCLA***).

How You Can Participate

The public is encouraged to participate in the process of selecting remedial alternatives. You can participate in several ways, including reading this Proposed Plan, reading additional documents in the ***Administrative Record***, attending one of the public meetings, and submitting verbal or written comments on the Administrative Record and this Proposed Plan. All comments and transcripts of meetings will become part of the Administrative Record. Written and verbal comments will be given equal consideration. Written comments can be submitted to Mr. Jerry Lyle, DOE Acting Deputy Assistant Manager of the Office of Program Execution, at the address listed on page 22 on or before June 18, 1994.

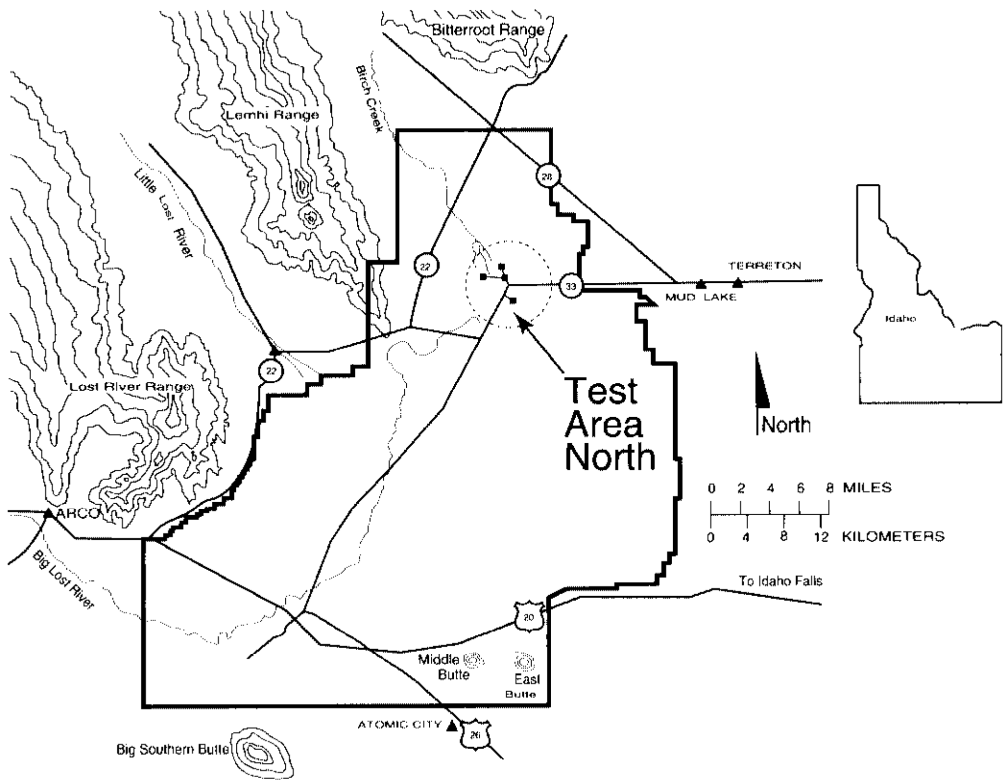

Figure 1. Location of the Test Area North facility with respect to the INEL.

Although the agencies have proposed a preferred alternative, the remedy will not be selected and implemented until the public comment period has ended and all comments have been reviewed and considered. The public is encouraged to review and comment on all the alternatives developed and analyzed for OU 1-07B, not just the preferred alternative. The public is also encouraged to review and comment on the recommendation for no further action developed for each of the other sites. After considering these comments, the agencies will select a remedy and document this choice by preparing a ***Record of Decision*** (ROD). Comments will be summarized responded to in the ***Responsiveness Summary*** portion of the ROD. The final rem

Proposed Plan - Document requesting public input on a proposed remedial alternative.

Interim Action - Early remedial actions to eliminate, reduce, or control the hazards posed by a site or to expedite the completion of total site remediation.

Operable Unit - Area, site, or group of sites defined by geographic features, contaminant boundaries, or other features distinguishing the area/sites.

parts per billion (ppb) - An expression of concentration of a substance (contaminant) dissolved in another substance such as water.

CERCLA - (Comprehensive Environmental Response, Compensation and Liability Act, commonly called Superfund, implemented by the National Contingency Plan) - Law that establishes a program to identify sites where hazardous substances have been released, leaked, spilled, poured, or dumped into the environment and requires evaluation of these sites.

Administrative Record - Documents including correspondence, public comments, Record of Decision, technical reports, and others upon which the agencies base their remedial action selection.

Record of Decision **(ROD)** - Legal document that details facts, sources of information, and reports about the site, the remedy selection process, and the selected remedy for a cleanup under CERCLA. Contains the Responsiveness Summary.

Responsiveness Summary - The part of the ROD that summarizes and responds to comments received during the public comment period.

ision and action plans presented in the ROD could be different from the OU 1-07B ferred alternative depending on new information gained from the injection well interim action or public comments. For example, alternate process options may be selected in lieu of those presented for the preferred alternative in this proposed plan.

Groundwater Contamination (OU-1-07B)

A remedial investigation (RI) was conducted for TAN groundwater to (a) confirm that waste disposed of in the TSF injection well is the source of the groundwater contamination, (b) define the extent of contamination in TAN groundwater, and (c) evaluate the risks to human health and the environment from the contamination if no action is taken to clean up the groundwater. A feasibility study (FS) was conducted to develop potential remedial alternatives. This information is presented in greater detail in the RI and FS reports. The RI and FS reports for the TAN Groundwater OU 1-07B are available in the Administrative Record. Copies of the Administrative Record may be reviewed at the INEL Information Repositories listed on page 22.

Site Description and History

In November 1989, the INEL was placed on the ***National Priorities List*** (NPL). Under CERCLA, the risks posed by hazardous substances at NPL sites must be evaluated and, if necessary, appropriate remedial actions must be selected and implemented to reduce human health and environmental risks.

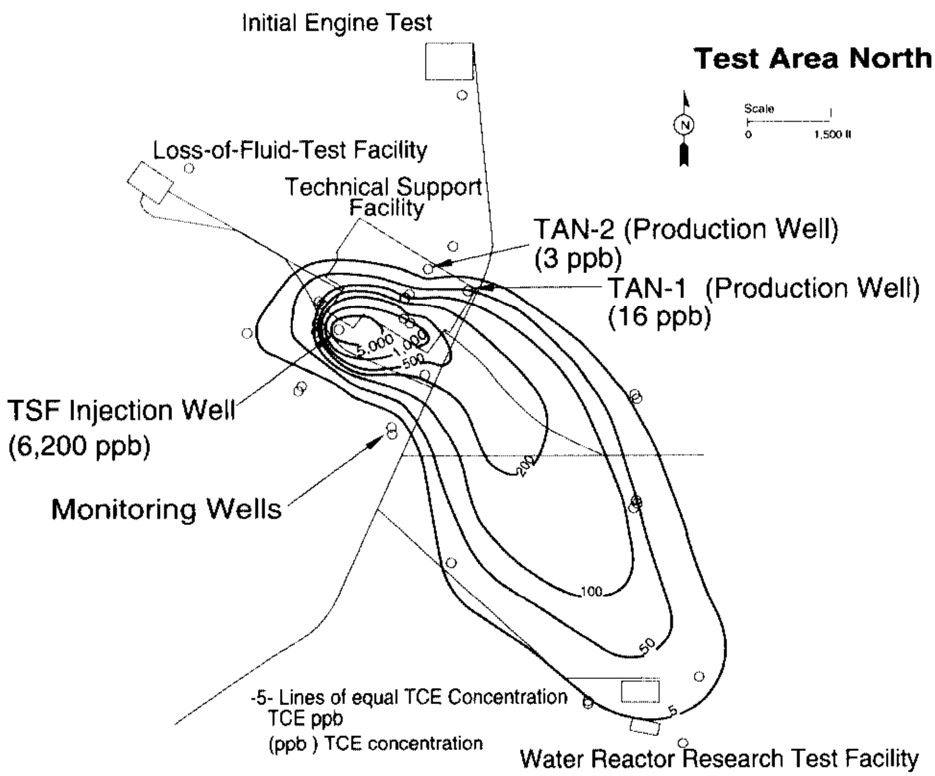

Figure 2. Trichloroethene (TCE) contaminant plume in TAN groundwater.

National Priorities List (NPL) - A list of sites designated by EPA for investigation and potential cleanup.

***Federal Facility Agreement and Consent Order* (FFA/CO)** - The official title of legally binding document required by CERCLA, that is entered into by DOE-Idaho, EPA, and the State of Idaho. It implements Resource Conservation and Recovery Act (RCRA) and CERCLA responsibilities at the INEL.

Action Plan - Document which defines the schedule and procedures for implementing the FFA/CO, the agreement between DOE, EPA, and the State of Idaho implementing RCRA and CERCLA at the INEL.

In order to meet CERCLA requirements and State cleanup requirements under the Idaho Hazardous Waste Management Act, the agencies signed a ***Federal Facility Agreement and Consent Order*** (FFA/CO) in December 1991. Any required CERCLA activities for specific OUs at the INEL are guided by this FFA/CO and ***Action Plan.*** These documents, negotiated between the agencies, provide procedures and schedules to ensure that investigations are conducted in compliance with State and Federal environmental laws.

TAN was initially developed in the early 1950s to support the U.S. Air Force Aircraft Nuclear Propulsion project. The Aircraft Nuclear Propulsion project objectives were to develop and test various designs for nuclear-powered engines and fuels for use on aircraft. Four facilities were built at TAN to support the Aircraft Nuclear Propulsion project: the Test Support Facility [now the Technical Support Facility (TSF)], the Initial Engine Test (IET) facility, the Low Power Test Facility/Experimental Beryllium Oxide Reactor [now the Water Reactor Research Test Facility (WRRTF)], and the Final Engine Test Facility [now the Loss-of-Fluid-Test Facility (LOFT)].

The top of the Snake River Plain Aquifer is about 200 feet below the TAN facility. The aquifer occurs in basaltic lava flows. Thin layers of clay, silt, and sand sediments called interbeds lie between the flows.

Impact to Aquifer

The principal source of groundwater contamination at TAN has been identified as th TSF injection well. As shown in Figure 2, the TSF injection well is located in the southwestern corner of TSF at TAN. The well was drilled in 1953 to a depth of 310 feet and has perforated openings from 180 to 244 feet and from 269 to 305 feet below the land surface. The well was used from 1955 to 1972 to dispose of TAN liquid wastes into the Snake River Plain Aquifer. These wastes included organic, inorganic, and low-level radioactive wastewaters that were added to industrial and sanitary wastewater. After 1972, the wastes were discharged into the TAN disposal pond.

Releases to TAN groundwater were first identified as a problem in 1987 when low levels (up to 8 ppb) of the organic compounds TCE and tetrachloroethene (PCE) were found in the production wells that supply drinking water to TSF. To reduce the concentrations of TCE and PCE in the drinking water and to mitigate potential risks to personnel at TAN, an air sparging system was installed on the drinking water supply system. Subsequent sampling of nondrinking water wells confirmed the presence of organic compounds and radionuclides above safe drinking water standards.

The highest groundwater contaminant concentrations are found near the TSF injection well, but drop rapidly as the distance from the injection well increases. In the 40 years since the well started operation, the TCE appears to have traveled 1-1/2 miles in the direction of groundwater flow (south to southeast; Figure 2). Other contaminants have been found above safe drinking water standards at distances less than one mile downgradient from the injection well. One contaminant (lead) was identified as a concern for the OU 1-07A interim action, but was eliminated for OU 1-07B because it was not consistently detected in the groundwater.

vironmental concentrations of TCE at the TSF injection well were measured in .. /92 at approximately 1,000 times greater than the drinking water standard. In early 1990, sludge was removed that had built up in the bottom 55 feet of the TSF injection well during its years of operation. Both the TCE concentration in the analyzed sludge and the continued elevated contaminant concentrations in groundwater from the TSF injection well suggest that a ***secondary source*** of contaminants is likely present in the fractured basalt near the well.

Secondary Source - All existing undissolved sources of contaminants.

Contaminants of Concern (COCs) - Hazardous and radioactive substances that pose a potential risk to human health and the environment at a site.

Summary of Site Risks

The only wells that are currently contaminated are in the immediate vicinity of TAN, and the untreated groundwater is not accessible to the general public and therefore, there is not a current public risk. However, there is a potential risk to future groundwater users. Since 1989, the water pumped from this contaminated area of the Snake River Plain Aquifer for TAN facility use has been treated using an air sparger system to reduce contamination to below drinking water standards. The drinking water supply is routinely monitored; therefore, TAN workers and visitors are not at risk.

Contaminants were screened based on risk to identify ***contaminants of concern*** (COCs). The COCs in the immediate vicinity of the TSF injection well are shown in Table 1.

Table 1. Contaminants of concern in the immediate vicinity of the TSF injection well.

›ntaminant	Maximum Observed Concentrations	Drinking Water Standard	Units
[illegible]			
Strontium-90	640	8	pCi/L [a]
Tritium	18,800	20,000	pCi/L
Cesium-137	2,240	119	pCi/L
Uranium-234	17	30	pCi/L
[illegible]			
Trichloroethene	17,000	5	ppb [b]
1, 2-Dicholoroethene	9,300	100	ppb
Tetrachloroethene	39	5	ppb

a. Picocuries per liter
b. Parts per billion

The groundwater plume, which extends beyond the immediate vicinity of the TSF injection well, contains the same COCs as the injection well, except for uranium-234 and cesium-137. Although americium-241 was also identified in the groundwater, it was not consistently detected and is not considered a COC for OU 1-07B.

The objective of the human health evaluation is to estimate the type and magnitude of exposures to the COCs identified in the TAN groundwater plume and the TSF ` 'ection well. The human health risk assessment evaluated carcinogenic and ıcarcinogenic risks under both current and future land-use scenarios. The current ıand-use scenario evaluates the industrial use of groundwater from the TAN

National Contingency Plan (NCP) - Regulations implementing response actions under CERCLA, including the procedures for emergency response to releases of hazardous substances.

Table 2. Summary of risk for TAN groundwater.

Scenario	Carcinogenic Risk[1, 3]	Noncarcinogenic Risk (Hazard Index)[2, 3]
Current Industrial Scenario (production wells)		
Total nonradioactive chemical water ingestion	8 in 10,000,000	0.003
Total radioactive chemical water ingestion	6 in 10,000,000	
Total inhalation	4 in 100,000,000	
Total Risk	1 in 1,000,000	0.003
Future residential exposure to groundwater plume		
Total nonradioactive chemical water ingestion	1 in 100,000	0.8
Total radioactive chemical water ingestion	4 in 1,000,000	
Total inhalation	7 in 10,000,000	
Total nonradioactive chemical crop ingestion	3 in 1,000,000	0.1
Total radioactive chemical crop ingestion	1 in 100,000	
Total Risk	3 in 100,000	0.9
Future residential exposure to TSF injection well		
Total nonradioactive chemical water ingestion	1 in 1,000	20.5
Total radioactive chemical water ingestion	5 in 10,000	
Total inhalation	5 in 100,000	
Total nonradioactive chemical crop ingestion	2 in 10,000	2.5
Total radioactive chemical crop ingestion	5 in 10,000	
Total Risk	2 in 1,000	23

1. A cancer risk level of 1 in 10,000 means that one additional person out of ten thousand beyond the national average is at risk of developing cancer if the site is not cleaned up.

2. A hazard index greater than 1 indicates there may be concern for noncarcinogenic effects.

3. Under the current-use scenario groundwater is only available via the production wells. Under the future-use scenario, groundwater is assumed to be accessible from the groundwater plume and the TSF injection well.

production wells as if the water was not treated through the existing air sparger. The evaluation of the current industrial use scenario assumes two exposure scenarios for workers and visitors. These include the use of groundwater from the TAN production wells for drinking and showering (that is, inhalation).

For the future residential scenarios, it was assumed that a family would occupy the area and engage in agricultural activities such as the irrigation of crops, livestock watering, and domestic activities and would use water pumped from the Snake River Plain Aquifer. The residential-use scenario consists of two different future land-use cases. One of the land-use cases assumes groundwater from within the plume will be used by residents. The other future land-use case evaluates the use of groundwater directly from the TSF injection well.

Predictive modeling is used to estimate future contaminant concentrations and risks to human health. The risks calculated for the scenarios are presented in Table 2. Because of the conservative modeling assumptions used, the risks presented in Table 2 are likely to be greater than the actual risks posed by this site. The ***Nationa Contingency Plan*** (NCP) establishes acceptable levels of carcinogenic risk for CERCLA sites at between one in 10,000 and one in 1,000,000 additional cancer cases 'f no cleanup actions are taken. The estimated risks for future residential use of the F injection well are unacceptable because two people in addition to the national average, out of every 1,000 would be at risk of developing cancer if they drank water from the injection well.

The objective of the ecological risk assessment was to determine whether the COCs found in TAN groundwater resulted in an adverse ecological impact. The ecological assessment is a qualitative/semiquantitative appraisal of the actual or potential effects of the TAN groundwater on plants and animals (ecological receptors) other than people and domesticated animals. On the basis of the ecological risk assessment presented in the RI report, there is no current exposure of ecological receptors to the contaminated groundwater at TAN. Future exposure of ecological receptors would be primarily through irrigation of crops. A more detailed ecological risk assessment will be performed as part of the INEL site-wide ecological risk assessment.

Need and Purpose of the Remedial Action

Actual releases of hazardous substances from this site, if not addressed by the preferred alternative or another measure may present a threat to public health or the environment. In order to address this threat, an overall ***remedial action objective*** (RAO) was developed in accordance with the NCP and EPA guidance. The overall remedial action objective for the groundwater is to prevent exposure to groundwater with contaminant concentrations in excess of drinking water standards.

Summary of Alternatives

.he FS, alternatives were identified that (a) achieve the stated RAOs, (b) provide overall protection of human health and the environment, (c) meet ***applicable or relevant and appropriate requirements*** (ARARs) to the extent practicable, and (d) are cost effective.

Alternative 1: No Action Alternative

The NCP requires a "no action" alternative to establish a baseline for comparison to alternatives that require action. Under this alternative, no attempt would be made to contain, treat in place, or extract and treat any contaminated groundwater within OU 1-07B. Under this alternative, no ***institutional controls*** are assumed. Groundwater monitoring would be implemented under the "no action" alternative.

Estimated costs associated with the "no action" alternative are **$393,000** (capital costs are $141,000 and operations and maintenance costs are $252,000).

Alternative 2: Limited Action Consisting of Institutional Controls

Under this alternative, no action would be taken to remediate contaminated groundwater and contaminant sources associated with OU 1-07B. Instead, the limited action alternative would entail implementing institutional controls to protect current and future users from health risks associated with the groundwater contamination. Institutional controls to prevent exposure to contaminated groundwater could include :alling an alternate water supply well, posting of the area, and prohibiting installation and use of any wells for drinking water. Groundwater monitoring would

***Remedial Action Objectives* (RAOs)** - Goals set in accordance with EPA guidance for protection of human health and environmental receptors from potential adverse effects of contaminants that could occur in, or be transported by, groundwater, soil, and air.

Applicable or Relevant and Appropriate Requirements (ARARS) - "Applicable" requirements are those standards, criteria, or limitations promulgated under Federal or State law that are required specific to a substance, pollutant, contaminant, action, location, or other circumstance at a CERCLA site. "Relevant and Appropriate" requirements are those standards, requirements, or limitations that address problems or situations sufficiently similar to those encountered at the CERCLA site such that their use is well suited to that particular site.

Institutional Controls - Measures implemented by DOE-ID to ensure safe operation of the INEL. Institutional controls include, but are not limited to, restricting land use, controlling public access, posting of signs, fencing, or other barriers, etc.

Hotspot - Location of a substantially higher concentration of a contaminant of concern than in surrounding areas of a site. In the case of the groundwater contamination at TAN, the hotspot is in the aquifer in the immediate vicinity of the TSF injection well.

Enhanced Extraction Technologies - The enhanced extraction technologies being considered for OU 1-07B include surfactant injection and steam injection. Either steam or surfactants would aid in the removal of the secondary source at the TSF injection well.

Air stripping - Remedial technology where air is forced through the water to remove organic contaminants. A separate process, such as carbon adsorption, is often used to reduce contaminant concentrations in the air to below regulatory standards before release to the environment.

Carbon adsorption - Remedial technology where primarily organic compounds removed from air or water adhere to activated carbon, which is slightly larger than sand grains.

be conducted on a yearly basis to monitor the distribution, migration, and fate of contaminants already in TAN groundwater.

Estimated costs associated with Alternative 1 are **$692,000** ($440,000 capital; $252,000 operations and maintenance).

Alternative 3: 5,000 ppb Groundwater Plume Extraction with Air Stripping; Enhanced Extraction of Hotspot with Aboveground Treatment

This alternative would involve (a) continuation of the interim action, (b) institutional controls and groundwater monitoring, (c) extraction and treatment of all groundwater defined by the 5,000 ppb TCE concentration contour in Figure 2, and (d) removal of the secondary source in the immediate vicinity of the TSF injection well (***hotspot***).

Continuation of the OU 1-07A interim action would help limit the spread of contaminants until either a hotspot remediation facility or a plume remediation facility becomes operational. Hotspot and plume remediation would be implemented in a phased approach. Extraction and treatment of hotspot contaminants (Phase I) would involve ***enhanced extraction technologies***. Phase I would be performed over a period of approximately four years. Years one and two would focus on proof-of-concept testing, design, and construction (cost ≈ $ 1,800,000), with the final two years devoted to full-scale implementation of the selected enhanced technology. Depending on the results of the proof-of-concept testing, full-scale implementation of the enhanced technology may or may not occur; thus, the full cost of Phase I may be reduced. After remediation of the hotspot, dissolved contaminants within the 5,000 ppb plume wou be remediated by conventional pump and treat technologies (Phase II). Extraction a. treatment of the groundwater plume outside the hotspot would be accomplished via one extraction well (located within the 5,000 ppb plume) and four injection wells. The four injection wells would be at various locations outside the boundary of the 5,000 ppb concentration contour. The extraction well would be capable of extracting groundwater at a rate of 1,000 gallons per minute. Similarly, the four injection wells would be required to reintroduce the treated water back into the aquifer at a combined rate of 1,000 gpm.

It is anticipated that a minimum of 10 volumes (defined as the volume of groundwater contained within the 5,000 ppb isocontour) and a maximum of 40 volumes would have to be pumped to remediate the 5,000 ppb plume. After pumping the 10 volumes of contaminated water, the agencies would review the data to determine whether the RAOs were achieved. If RAOs have not been achieved, pumping would continue up to a maximum of 40 volumes. For costing purposes, a 10-volume removal has been used here and may be a more realistic estimate for remediation if Phase I is successful in removing hotspot contaminants. Phase II would be performed over a minimum of three and a maximum of six years. The first two years would be devoted to designing and constructing the extraction/treatment system and would be carried out concurrent with Phase I full-scale implementation. A minimum of one and a maximum of four additional years would then be required to remove the 10 to 40 volumes of contaminated groundwater. The entire remediation effort for Alternative 3 is estimated to take five to eight years.

Aboveground organic compound removal would be accomplished by ***air stripping***, followed by ***carbon adsorption*** to remove volatilized organic compounds from vapor

-gas generated during the stripping process. Liquid effluent would then be treated by ***ion exchange*** to remove strontium-90, cesium-137, and uranium-234 that may be present. These technologies are considered representative of available process options. However, other process options (that is, UV-oxidation, catalytic oxidation, etc.) would be evaluated as part of an engineering evaluation to be conducted. On the basis of this evaluation, alternate aboveground treatment technologies may be selected in the final remedial design.

Ion exchange - Remedial technology where small resin beads take metals and radionuclide particles out of contaminated water. The contaminants are taken out of the water and "exchanged" with nonhazardous materials such as sodium.

Estimated costs associated with Alternative 3, assuming a 10-volume groundwater removal and proof-of-concept testing for hotspot remediation, are **$21,200,000** ($10,600,000 capital; $8,800,000 operations and maintenance; $1,800,000 testing). Assuming a 40-volume groundwater removal, costs are **$25,800,000** ($11,900,000 capital; $12,100,000 operations and maintenance; $1,800,000 testing).

Alternative 4: 25 ppb Groundwater Plume Extraction with Air Stripping; Enhanced Extraction of Hotspot with Aboveground Treatment

This alternative would involve (a) continuation of the interim action, (b) institutional controls and groundwater monitoring, (c) extraction and treatment of all groundwater defined by the 25 ppb TCE concentration contour, and (d) removal of the secondary source in the immediate vicinity of the TSF injection well. Specifically, the focus of this alternative would be to extract and treat **all** groundwater defined by the area of the aquifer that contains volatile organic compounds at concentrations over 25 ppb and to recover the more highly contaminated groundwater and secondary source in the immediate vicinity of the TSF injection well. Removal of the secondary source within the hotspot would reduce the likelihood of the hotspot recontaminating the groundwater plume.

Extraction and treatment of groundwater at the hotspot could involve enhanced extraction technologies.

Treatment of the groundwater plume would require a larger system to remove the volatile organic contaminants than the system proposed for the hotspot. Extraction and treatment of the plume outside the hotspot would be accomplished via four to six extraction wells installed at various locations inside the boundaries of the contaminant plume. These wells would be capable of extracting groundwater at a combined rate of 10,000 gpm. Similarly, an additional four to six injection wells would be required to reintroduce the treated water back into the aquifer at a combined rate of 10,000 gpm.

Though no treatment would be required to remove radionuclides from the larger groundwater plume (with the exception of the northwestern portion of the 25 ppb contaminant plume and the hotspot around the TSF injection well), ion exchange was included as a representative process option for treatment. The primary representative process for treatment of the large groundwater plume under this alternative would be air stripping.

The predicted timeframe required to remove the secondary source of organic compounds near the TSF injection well under this alternative would be approximately two to 18 years. For costing purposes, a two-year pilot-scale study and a two-year, full-scale hotspot remediation has been used here. Similarly, the predicted timeframe required to reduce the concentrations of contaminants to below drinking water standards in the larger groundwater plume would be approximately 10 to 40 years. . is anticipated that a minimum of 10 volumes (10 years) and a maximum of 40 volumes (40 years) would have to be pumped to remediate the plume. For costing purposes and comparison to Alternative 3, a minimum of 10 volumes has been used here. Because the hotspot remediation near the TSF injection well can be accomplished during the same time period as the remediation of the larger groundwater plume, the total time required for remediation under Alternative 4 is approximately 10 years for a 10-volume plume scenario and 40 years for a 40-volume removal scenario.

Estimated costs associated with Alternative 4, assuming a 10-volume groundwater removal and proof-of-concept testing for hotspot remediation are **$58,300,000** ($27,300,000 capital; $29,200,000 operations and maintenance; $1,800,000 testing). For the 40-volume groundwater removal, costs are **$94,600,000** ($32,000,000 capital; $60,800,000 operations and maintenance; $1,800,000 testing).

Evaluation of Alternatives

Each of the alternatives subjected to detailed analysis were evaluated against eight of the nine evaluation criteria identified under CERCLA (see sidebar pages 10 and 11). The ninth criterion, community acceptance will be evaluated when public response to the proposed remedial action for the TAN groundwater is received. Brief definitions and the categorization of all nine criteria are provided in the sidebar. The Agencies will use public comments and new information (i.e., from the OU 1-7A interim Action) to accept or modify the preferred alternative or possibly to select another alternative presented in this plan or taken from the public review. This decision will be explained in the TAN Groundwater ROD.

1. Overall Protection of Human Health and the Environment

Alternative 1 is not protective of human health and the environment because no action would be taken to address groundwater contamination and no controls would be implemented to prevent use of the groundwater. Alternative 2 would use institutional controls to prevent the use of contaminated groundwater until cleanup standards are achieved. Alternatives 3 and 4 are protective of human health and the environment by preventing or reducing risk through the use of engineering and institutional control measures.

2. Compliance with Applicable or Relevant and Appropriate Requirements

A detailed list of the ARARs pertinent to OU 1-07B is provided in the OU 1-07B FS report. The major ARAR is the Safe Drinking Water Act.

Alternatives 1 and 2 would rely in part on natural processes to decrease contaminant concentrations in groundwater. Drinking water standards would likely be exceeded for hundreds of years. Because these alternatives do not satisfy the two threshold criteria, they will not be discussed further in this plan.

Alternatives 3 and 4 would be designed and implemented to meet all applicable or relevant and appropriate State and Federal regulations, including air emission

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Evaluation Criteria

Threshold Criteria:

1. **Overall protection of human health and the environment** addresses whether a remedy provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. **Compliance with applicable or relevant and appropriate *requirements* (ARARs)** addresses whether a remedy will meet all of the ARARs or other Federal and State environmental laws and/or justifies a waiver on the basis of technical impracticability (unable to achieve drinking water standards).

Primary Balancing Criteria:

3. **Long-term effectiveness and permanence** refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

4. **Reduction of toxicity, mobility, or volume through treatment** is the anticipated performance of the treatment technologies a remedy may employ.

5. **Short-term effectiveness** addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction *and implementation period,* until cleanup goals are achieved.

6. **Implementability** is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

ıitations, groundwater cleanup standards, and disposal of treatment residuals from groundwater treatment activities.

3. Long-term Effectiveness and Permanence

Alternative 3 would have good long-term effectiveness and permanence because it would remove contaminants from the hotspot and dissolved contaminant concentrations greater than 5,000 ppb from the groundwater plume. This would result in a low residual risk.

Alternative 4 would have the best long-term effectiveness and permanence because it would remove the maximum amount of contaminants from both the hotspot area and the larger groundwater plume, and would have the lowest residual risk. However, because of the uncertainty associated with remediating contaminants in fractured basalt, it is unpredictable whether such treatment would remove all of the contaminants.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

Both Alternatives 3 and 4 would collect and treat COCs in the hotspot region, resulting in a large volume reduction as contaminants are captured by air stripping, carbon adsorption, and ion exchange. Recovery would be increased using an enhanced technology, and extraction of contaminants should preclude migration from the hotspot. Alternative 4 would address a larger volume of contaminants than Alternative 3.

5. Short-term Effectiveness

Alternatives 3 and 4 would not be expected to pose an unacceptable risk to workers or visitors during implementation. All potential impacts from construction and system operations would be readily controlled using standard engineering controls and practices. Although Alternative 4 would include more extensive groundwater extraction and treatment, it is questionable whether groundwater treatment would be able to achieve cleanup standards faster than Alternative 3 because of the uncertainty associated with remediating contaminants in fractured basalt.

6. Implementability

Although Alternatives 3 and 4 are technically feasible, both would require a phased approach to verify treatment performance and to determine sizing criteria for the remedial design. However, the effectiveness of the enhanced technologies in achieving groundwater cleanup standards is not well-established, particularly in fractured rocks.

As shown in Figure 2, Alternative 3 would remediate a smaller portion of the groundwater plume than Alternative 4 would remediate. As a result, Alternative 4 would require a greater number of wells and a larger treatment facility, and would result in a larger volume of residual waste requiring disposal. Thus, Alternative 4 has more technical and administrative difficulties than Alternative 3.

Evaluation Criteria (cont.)

7. **Cost** includes estimated capital and operations and maintenance costs, expressed as net present worth-costs.

Modifying Criteria:

8. **State/support agency acceptance** reflects aspects of the preferred alternative and other alternatives that the support agency favors or objects to, and any specific comments regarding State ARARs or the proposed use of waivers. The Proposed Plan addresses views known at the time the plan is issued but does not speculate. The assessment of State concerns may not be complete until after the public comment period on the RI/FS and Proposed Plan is held.

9. **Community acceptance** summarizes the public's general response to the alternatives described in the Proposed Plan and in the RI/FS, based on public comments received. Like State acceptance, evaluations under this criterion usually will not be completed until after the public comment period is held.

A list of ARARs can be found in the ***Feasibility Study Report for Operable Unit 1-07B***, section 4, tables 4-1 and 4-2.

DIVISION OF ENVIRONMENTAL QUALITY

The Idaho Department of Health and Welfare is one of the three agencies identified in the Federal Facility Agreement that establishes the scope and schedule of remedial investigations at the INEL. Project correspondence by the Division of Environmental Quality staff can be found in the Administrative Record for this project under Operable Unit 1-07B.

For additional information concerning the State's role in preparing this Proposed Plan, contact:

Mr. Dean Nygard
Division of Environmental Quality
Idaho Department of Health and Welfare
1410 N. Hilton
Boise, ID 83706
(208) 334-5860, (800) 232-4635

7. Cost

The cost estimates, in present dollar value, include direct and indirect capital costs as well as operations and maintenance costs.

Alternatives 3 and 4 include estimates for both a 10-volume removal scenario and a 40-volume removal scenario. It is anticipated that the 10-volume estimate would be representative if the hotspot remedial action is successful in removing the secondary source of contaminants. Alternative 3 would cost approximately 65 to 70 percent less than Alternative 4.

8. State Acceptance

This proposed plan has been prepared and issued with the concurrence of the Idaho Department of Health and Welfare.

Summary of Preferred Alternative

The agencies prefer Alternative 3 as the final alternative for OU 1-07B. The preferred alternative would involve (a) continuation of the interim action, (b) institutional controls and groundwater monitoring, (c) extraction and treatment of all groundwater defined by the 5,000 ppb TCE plume, (d) removal of the secondary source of contaminants in the immediate vicinity of the TSF injection well. The agencies believe that the preferred alternative would (a) protect human health and the environment, (b) comply with Federal and State regulations to the extant practicable, and (c) be cost effective.

This Alternative is preferred because the agencies believe it provide the best balance between protection of human health and the environment and the other evaluation criteria. Although only a small portion of the groundwater contaminant plume is proposed for remediation under this alternative, if it is successful, it would produce a significant reduction in risk because the worst part of the plume would be remediated.

Although Alternative 4 would possibly remediate a larger portion of the contaminant plume, the agencies believe that the most prudent action at this time would be to monitor that part of the plume until the success of the preferred alternative can be judged. If the preferred alternative is selected, information gathered form that action would be used to assess remedial alternatives for the contaminant plume with TCE concentrations between 5,000 and 5 ppb. This assessment would be performed in the TAN comprehensive RI/FS (OU 1-10) and the INEL-wide comprehensive RI/FS.

No Action Sites

The following sections of this Proposed Plan summarize information and seek comment on the group of no action sites at TAN proposed by the agencies. These sites had been identified from earlier documents as potential sources of contamination.

The typical Superfund site is often an obvious disposal site that contains hazardous wastes that have leaked into underlying soils and groundwater. In these cases, the location and boundaries of areas of contaminant concentrations can be readily identified.

Many sites at the INEL do not fit into this typical category. Instead, they fall into the category of ***historical sites*** and have low or unknown quantities of residual contamination. These sites are termed ***low probability hazardous sites***. For typical low probability hazardous sites, either the location and quantities of hazardous substances disposed of or leaked are unknown or there is significant uncertainty in the actual conditions. Detailed information on these decision documents can be found in the "Test Area North Waste Area Group 1, Track 1 sites" Administrative Record binder, located in the INEL Information Repositories (see page 22).

In accordance with the FFA/CO, the agencies are evaluating the potential for contamination at the low probability hazardous sites. The evaluation process involves collecting and interpreting existing data to determine whether the site poses ***acceptable or unacceptable risks.*** The information is then assembled into a decision document that consists of a series of questions, forms, tables, and a qualitative risk assessment. This screening approach provides for the efficient use of available resources and for a rigorous process to evaluate the risks from these sites to determine whether additional investigation is required. This evaluation process is then used to determine whether (a) the site poses a clear risk that requires an interim action, (b) the site should be further investigated under CERCLA, (c) the site should be referred to another State or Federal program, or (d) the source does not appear to pose a risk to human health or the environment and therefore no further action is required.

Over 40 sites at TAN fall into the category of low probability hazardous sites. Of these, the 31 sites discussed in the following sections have been evaluated and are proposed for no further action under CERCLA. The sites have been arranged into three groups: underground storage tanks, soil contamination sites, and wastewater disposal sites. The evaluation of all of these sites has included record reviews, document searches, employee interviews, site visits, field screening using portable field instruments, and/or soil sampling where appropriate. The evaluations indicate that these areas pose an acceptable risk to human health or the environment. A brief description and summary of each site is presented below. Complete decision documents for each site are available in the Administrative Record.

Underground Storage Tanks

The following 18 former underground storage tank sites were evaluated as low probability hazardous sites. Except where noted, all of the tanks, their contents, and associated piping have been removed. All of the tank sites have been backfilled with new soil and restored for unrestricted use. In many cases, the tank and the associated piping have been recycled as scrap metal.

Several of the tank sites had petroleum-related organic contamination (i.e., benzene, toluene, ethylbenzene, and xylene) in the site soil below the excavation. In each case, a risk evaluation determined that the residual soil concentration for these contaminants did not exceed the 10^{-6} (1 in 1,000,000) ***risk-based concentrations*** for the air volatilization, soil inhalation, soil ingestion, or groundwater ingestion exposure routes. Table 3 is a summary of the risk-based concentrations possible for each of these exposure routes. In some cases, a range for the risk-based concentrations for an exposure route is provided because the exposure route is sensitive to the size or depth of the site.

Historical Sites - Sites determined to have existed prior to the 1980 enactment of CERCLA and have been identified from previous information, personnel interviews, or site records.

Low probability hazardous site - Typically, these sites are poorly defined with respect to types, quantities or the presence of contamination prior to the site being investigated. In some cases, there may even be uncertainty about the existence and/or the location of the site.

Acceptable risk - An acceptable risk range is when the excess risk to individual for adverse human health effects from a 30 year exposure to a certain concentration of a contaminant falls between 10^{-4} (1 in 10,000) and 10^{-6} (1 in 1,000,000).

Unacceptable risk - Concentrations of contaminates that exceed the NCP calculated probability of 10^{-6} (1 in 1,000,000) risk and therefore are likely to cause adverse effects to human health and/or the environment.

Risk-Based Concentrations- Concentration(s) of contaminant(s) that have a calculated probability of causing adverse health effects.
The risk-based concentrations are designed to be health-protective; if contaminant concentrations are below these levels, adverse health effects are unlikely. ***None of the no actions sites had contaminants present above these risk-based concentrations.***

Detailed information on these decision documents can be found in the ***Test Area North Waste Area Group 1, Track 1 Sites,*** Administrative Record binder located in the INEL Information Repositories (see page 22).

The **U.S. Environmental Protection Agency** is one of the three agencies identified in the Federal Facility Agreement that establishes the scope and schedule of remedial investigations at the INEL. Correspondence by the Region 10 staff concerning this project can be found in the Administrative Record under Operable Unit 1-07B.

For additional information concerning the EPA's role in preparing this Proposed Plan contact:

Mr. Wayne Pierre
Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, WA 98101
(206) 553-7261

- IET-01 [Underground Storage Tank (TAN-318)]—IET-01 is a former 5,000-gallon gasoline tank installed in 1958 and last used in 1965. The tank contents were removed in September 1991. The tank and the associated piping were removed in August 1992.

  There were no holes in either the tank or the associated piping, and no visually stained or discolored soil was observed in the tank excavation. Field screening during the tank removal and the results of soil analyses from the excavation detected no organic contamination.

- IET-05 [Underground Storage Tank (TAN-1714)]—IET-05 is a former 550-gallon underground tank used for storage of fire-fighting foam (a biodegradable and nonhazardous material only) from 1958 to 1961. The tank contents were sampled and analyzed for organic and inorganic contaminants. No contaminants were detected at levels that exceed the 10^{-6} risk-based concentrations. The storage tank and its associated piping were removed in 1990.

  There were no holes in either the tank or the associated piping, and no visually stained or discolored soil was observed in the tank excavation. No soil samples were collected beneath the tank because the tank contents were determined to be nonhazardous and no releases from the tank were found during removal, based on visual observations and field screening.

- IET-09 [Underground Storage Tank (TAN-316)]—IET-09 is a former 550-gallon lube oil tank installed in 1958 and last used in 1960. Sample analyses of the tan contents detected typical petroleum constituents and elevated levels of barium. The tank contents were removed in September 1991 and disposed of as a hazardous waste. The tank and the associated piping were removed in October 1991.

  There were no holes in either the tank or the associated piping, and no visually stained or discolored soil was observed in the tank excavation. No releases have ever been reported and none are known to have occurred. Field screening during the tank removal and the results of soil analyses from the excavation detected no organic or inorganic contamination.

Table 3. Risk-based soil concentrations for the contaminants detected at some of the no action sites for each exposure route. Concentrations detected below these levels do not pose unacceptable risk.[a, b]

Exposure Route	Cesium-137	Benzene	Toluene	Ethylbenzene	Xylene
Air volatilization	N/A	38–111 ppm	195,000–>1,000,000 ppm	91,000–>1,000,000 ppm	300,000–>1,000,000 ppm
Air inhalation	>1,000,000 pC/g	465,000 – >1,000,000 ppm	>1,000,000 ppm	>1,000,000 ppm	>1,000,000 ppm
Soil ingestion	280 ppm	22 ppm	54,000 ppm	27,000 ppm	540,000 ppm
Groundwater ingestion	>1,000,000 pC/g	0.6–3.6 ppm	1,300–>1,000,000 ppm	1,800–9,000 ppm	7,300–>1,000,000 ppm

a. Shaded contaminants are carcinogenic
b. N/A = Not applicable.

- IET-10 (Diesel Fuel Underground Storage Tank)—IET-10 is a former 30,000-gallon underground tank used for storage of diesel fuel from 1957 to 1989. Removal of the storage tank, its contents, and the associated piping were completed in 1990. Two nearby tanks, their contents, and their associated piping were also removed in 1990.

  No holes were observed in the tank or the associated piping during excavation. The analytical results from soil samples taken from the tank excavation detected only 2.3 ppm of xylene. A risk evaluation determined that this contaminant was below all the 10^{-6} risk-based soil concentrations for the various exposure routes in Table 3.

- IET-11 (Heating Oil Underground Storage Tank)—IET-11 is a former 20,000-gallon underground tank used for storage of diesel fuel from 1957 to 1989. Removal of the storage tank, its contents, and the associated piping were completed in 1990. Two nearby tanks, their contents, and their associated piping were also removed in 1990.

  No holes were observed in the tank or the associated piping during the excavation. The analytical results from soil samples taken from the tank excavation detected only 0.08 ppm of toluene, 0.06 ppm of ethylbenzene, and 2.1 ppm of xylene. A risk evaluation determined that these contaminants were below all the 10^{-6} risk-based soil concentrations for the various exposure routes in Table 3.

- LOFT-05 [Fuel Tanks (TAN-109 A and B)]—LOFT-05 is the site of two 35,000-gallon underground tanks used for storage of heating oil from the mid 1950s to 1991. The tank contents were removed in 1991. However, the tanks and associated piping remain in place pending future use.

  All available drawings and documentation indicate that the tanks were designed and used for the storage of fuel oil only. Personnel interviews also support that the tanks were used only to store fuel oil for heating purposes. In addition, no releases have ever been recorded and none are known to have occurred.

- LOFT-06 (Tank east of TAN-631)—LOFT-06 is a former 2,000-gallon underground tank used from 1958 to 1963. The tank was designed to store waste jet fuel and diesel-contaminated wastewater. However, all available information indicates the tank was only used for diesel-contaminated wastewaters.

  Available drawings and documentation indicate that the tank contents were removed about 1965 and the tank was filled with sand. The site is currently covered by an asphalt road and parking lot. No surface contamination was visible in a 1966 aerial photograph before the asphalt road was built. Geophysical surveys performed in 1990 and 1993 did not locate the tank. No releases have ever been recorded and none are known to have occurred during the tank's five-year period of operation.

- LOFT-08 [Underground Storage Tank (TAN-764)]—LOFT-08 is a former 15,000-gallon tank installed in 1958 and last used in 1963. Records indicate the tank was intended for storage of potentially radioactively-contaminated petroleum jet fuel, but the project was cancelled in 1961 before the jet engines were tested. Therefore, the tanks were likely never used for their intended purpose. In January 1990, the LOFT-08 tank and the associated piping were removed.

No holes were observed in the tank and field screening detected no organic contamination in the site soil. The analytical results from soil samples collected from the tank excavation detected only 2 ppm of toluene and 22 ppm of ethylbenzene. A risk evaluation determined that these contaminants were below all the 10^{-6} risk-based soil concentrations for the various exposure routes shown in Table 3.

- TSF-01 [Underground Storage Tank (TAN-1714)]—TSF-01 is a former 3,000-gallon diesel fuel tank installed in 1953 and last used in 1985. A pipe leak in 1983 reportedly released approximately 500 gallons of diesel fuel into the surrounding soil. The pipe was replaced in 1983. The tank, its contents, and the associated piping were then removed in September 1991. No holes were observed in the tank or the associated new piping during the excavation.

  Approximately 96 cubic yards of contaminated soil were removed from the site. The analytical results from soil samples collected from the excavation detected only 2 ppm of ethylbenzene and 9 ppm of xylene. A risk evaluation determined that these contaminants were below all the 10^{-6} risk-based soil concentrations for the various exposure routes in Table 3.

- TSF-13 [Underground Storage Tank North of TAN-610 (TAN-1714)]—TSF-13 is a former 550-gallon gasoline tank. Records indicate the tank was installed in the early 1950s to supply a fire-pump engine. The tank and its contents were removed about 1980.

  No releases have ever been recorded and none are known to have occurred during the tank's operation. Geophysical surveys performed in 1993 did not locate the tank. A soil boring, completed in 1993 at the former tank site, detected no organic vapors in the site soil. Also, no visually stained or discolored soil was observed in the boring.

- TSF-14 [Underground Storage Tank (TAN-777B])—TSF-14 is a former 12,000-gallon tank used for the storage of heavy diesel fuel from 1954 to 1975. The tank, its contents, and the associated piping were removed in 1991.

  No holes were observed in the tank or the associated piping. Some radioactive soils were present above the tank from another pipe and some diesel-contaminated soil was present below the fill pipe. All soil contamination was removed. The analytical results of soil samples from the excavation detected only 0.55 ppm of benzene, 0.77 ppm of toluene, 2.2 ppm of ethylbenzene, and 0.96 ppm of xylene. A risk evaluation determined that these contaminants were below all the 10^{-6} risk-based concentrations for the various exposure routes in Table 3.

- TSF-15 [Underground Storage Tank (TAN-779)]—TSF-15 is a former 3,000-gallon fuel oil tank that contained diesel fuel. Records indicate the tank was installed in 1963 and last used in 1975. The tank, its contents, and the associated piping were removed in August 1990.

  No holes were observed in the tank, and field screening detected no organic contamination in the site soil. No visually stained or discolored soil was observed in the tank excavation. The results from soil sample analyses show that no organic contaminants were present in the site soil.

- TSF-24 [Underground Storage Tank (TAN-775)]—TSF-24 is a former 10,000-gallon tank planned to store jet engine fuel between 1955 and 1960. The tank, associated piping, and some soil with detectable contamination were removed in September 1990.

  No holes were observed in the tank, and field screening detected no organic contamination in the site soil around the tank piping. No visually stained or discolored soil was observed in the tank excavation. The results from soil sample analyses detected no organic contamination.

- TSF-32 [Underground Storage Tank (TAN-601S)]—TSF-32 is a former 170-gallon tank used to supply heating oil. Records indicate the tank was installed in the mid 1950s and last used in the late 1950s. The tank and associated piping are believed to have been removed sometime between the late 1950s and 1967.

  The site is currently covered by an asphalt road and parking lot. Geophysical surveys performed in 1990 and 1991 did not locate the tank, which supports the assumption that the tank had been previously removed. No releases have ever been recorded and none are known to have occurred during the tank's brief period of operation.

- TSF-33 [Underground Storage Tank (TAN-602E)]—TSF-33 is a former 10,000-gallon diesel fuel tank. Records indicate the tank was installed in 1959 and last used in 1960 when the ANP project was terminated. The tank, its contents, and the associated piping were removed in August 1990.

  No holes were observed in the tank, and field screening detected no organic contamination in the site soil. No visually stained or discolored soil was observed in the tank excavation. The results from soil sample analyses detected no organic contamination.

- WRRTF-09 [Underground Storage Tank (TAN-788)]—WRRTF-09 is a former 2,500-gallon diesel fuel tank used to supply an emergency generator. Records indicate the tank was installed in 1962 and last used in 1978. The tank, its contents, and the associated piping were removed in August 1990.

  No holes were observed in the tank, and field screening detected no organic contamination in the tank excavation. No visually stained or discolored soil was

The Department of Energy is one of the three agencies identified in the Federal Facility Agreement that establishes the scope and schedule of remedial investigations at the INEL. Project correspondence by the DOE staff can be found in the Administrative Record for this project under Operable Unit 1-07B.

Written comments concerning this plan can be submitted to the U.S. Department of Energy Idaho Operations Office, and addressed to:

Mr. Jerry Lyle
Acting Deputy Asst. Manager
Office of Program Execution
DOE-Idaho
P.O. Box 2047
Idaho Falls, ID 83403-2047

For additional information regarding the Environmental Restoration Program at the INEL, call Reuel Smith at the INEL Community Relations Plan office at (208) 526-6864, (800) 708-2680.

observed in the tank excavation. The results from soil sample analyses detected no organic contamination.

- WRRTF-10 [Underground Storage Tank (TAN-644)]—WRRTF-10 is a former 550-gallon gasoline tank used to supply an emergency generator. Records indicate the tank was installed in 1955 and last used in 1966. The tank, its contents, and the associated piping were removed in August 1990.

  No holes were observed in the tank, and field screening detected no organic contamination in the site soil. No visually stained or discolored soil was observed in the tank excavation. The results from soil sample analyses detected no organic contamination.

- WRRTF-12 [Diesel Fuel Underground Storage Tank (TAN-1714)]—WRRTF-12 is a former 1,000-gallon diesel fuel tank used to supply an emergency generator. Records indicate the tank was installed in the late 1950s and last used in 1975. The tank, its contents, the associated piping, and some contaminated soil around the tank were removed in August 1990.

  No holes were observed in the tank, and field screening detected some organic contamination in the site soil around the tank piping. The analytical results from soil samples taken from the tank excavation detected 0.6 ppm of toluene, 0.8 ppm of ethylbenzene, and 7 ppm of xylene. A risk evaluation determined that these contaminants were below all the 10^{-6} risk-based concentrations for the various exposure routes in Table 3.

Soil Contamination Sites

The following ten low probability hazardous sites were classified as potential soil contamination sites. Many of these sites were only suspected of having received hazardous and/or radioactive waste during the initial site identification, and the subsequent evaluation process has determined that no such disposal activities had occurred. Other sites are known to have had some contamination present, and the subsequent evaluation process has either documented the removal of the contamination or determined that contaminant concentrations remaining at the specific site(s) are at levels that pose an acceptable risk to human health or the environment.

- LOFT-01 [Diesel Fuel Spills (TAN-629)]—LOFT-01 is the site of several diesel spills that occurred when a diesel tank overflowed during filling between 1982 and 1986. The fuel oil flowed into a culvert and pooled in a ditch. The contaminated soil in the ditch was excavated and removed in 1990.

  Field screening and soil sampling detected only some petroleum-related organic contamination. The analytical results from soil samples detected 4.4 ppm of toluene, 2.8 ppm of ethylbenzene, and 9.3 ppm of xylene. A risk evaluation determined contaminants were all below the 10^{-6} risk-based concentrations for the various exposure routes in Table 3. No other hazardous or radioactive materials are known or suspected to be present.

- LOFT-03 (Rubble Pit south of LOFT Disposal Pond)—LOFT-03 was used on an irregular basis for surface disposal of construction debris such as concrete, metal, and wood from the late 1960s to the early 1970s. Most of the construction debris was removed in 1987 or 1988. The remaining debris was removed in 1991 and disposed of at the CFA Landfill.

Hazardous or radioactive materials are not known or suspected to have been disposed of at LOFT-03. Field inspections of the site and field screening of the debris and soil during cleanup operations did not reveal any organic or radiological contamination.

- LOFT-10 [Sulfuric Acid Spill (TAN-771)]—LOFT-10 was a 200-gallon sulfuric acid spill that occurred in 1983. Approximately 0.5 cubic yards of contaminated soil was excavated and disposed of at that time.

  Site investigations and soil testing in 1991 showed that no acid remained in the shallow soil at this site. No visually stained or discolored soil was observed at the site. It is likely that the sulfuric acid was quickly neutralized by the naturally alkaline native site soil. Calculations show that only 0.65 cubic yards of TAN soil would be required to neutralize 10-gallons of pure sulfuric acid. Except for the sulfuric acid spill, no other hazardous or radioactive materials are known or suspected to have been disposed of at LOFT-10.

- LOFT-11 (Cryogen Pits)—LOFT-11 is the site of three former concrete pits that were constructed in 1963. The pits were intended for the disposal of liquid nitrogen that was to be used as a coolant during the Liquid Cooled Reactor Experiment. The experiment was cancelled in 1967 before the pits were ever used.

  Available site engineering drawings and records document the planned use and subsequent backfilling of the pits. Hazardous or radioactive materials are not known or suspected to have been disposed of at LOFT-11. The site is currently covered by the concrete floor of Building TAN-629.

- LOFT-14 (Asbestos Pipe)—LOFT-14 was an abandoned metal pipe covered with asbestos insulation lying exposed on the ground. In July 1991, all the asbestos was removed from the pipe, packaged, and disposed of at the Asbestos Area at the CFA Landfill. The metal pipe and the underlying soil were also disposed of at the CFA Landfill.

  Except for the asbestos insulation, no other hazardous or radioactive materials are known or suspected to be present at the LOFT-14 site. Field inspections confirmed that no free asbestos fibers were visible in the surface soils after the pipe was removed.

- LOFT-15 (LOFT Buried Asbestos Pit)—LOFT-15 is the former site of a construction materials burn pit used from as early as 1957 to as late as 1979. The construction debris was most likely concrete, metal, and wood, and was disposed of and burned on an irregular basis. The pit was abandoned in 1979 and was covered with two to four feet of soil. Most of the debris was removed in 1992 and was disposed of at the CFA Landfill.

Hazardous or radioactive materials are not known or suspected to have been disposed of at LOFT-15. Field inspections of the site and field screening of the debris and soil during cleanup operations did not reveal the presence of any organic or radiological contamination.

- TSF-04 (Gravel Pit/Acid Pit)—TSF-04 is located in a former gravel pit used to dispose of construction debris such as concrete, metal, and wood from the 1950s to the mid 1970s. According to personnel interviews, the only hazardous material or waste disposed of in this area was one 55-gallon drum of sulfuric acid sometime between 1958 and 1959.

  Although sampling was not conducted at TSF-04, a 1990 field inspection revealed no evidence of stressed vegetation or surface stains at the site. In addition, sulfuric acid would have been quickly neutralized by the naturally alkaline native soil. It has been calculated that only 0.65 cubic yards of TAN soil would be required to neutralize 10 gallons of pure sulfuric acid. Any residual contaminants would have likely been removed by subsequent gravel quarrying activities. Except for the one drum of sulfuric acid, no other hazardous or radioactive materials are known or suspected to have been disposed of at TSF-04.

- TSF-25 (Underground Drain Sump East of TAN-609)—TSF-25 is an unlined drain sump used to collect waste jet fuel and other products from static engine tests. Records indicate the sump was installed in 1955 to replace a tank that had been removed. The sump was abandoned in 1987 and the floor drain to the sump was filled with concrete.

  Available drawings and information indicate the sump was used during the ANP project only to collect waste jet fuel from 1955 to 1961. Later use of the building did not require the use of the sump. Therefore, except for jet fuel, no other hazardous or radioactive materials are known or suspected to have been disposed of at TSF-25. Organic vapors were detected in the soil adjacent to the sump, however, subsequent soil samples results detected no organic contamination. There is no planned future use for the sump.

- TSF-36 (TAN-603 French Drain)—TSF-36 is a french drain that was installed in the early 1950s and extends to about six feet belowgrade. The drain was connected to a sump that was fed by floor drains and condensate lines from a boiler room. Records indicate the drain was last used in 1980.

  All available drawings and documentation indicate the french drain was designed and used for handling steam condensate from the boilers only. Personnel interviews also support the fact that the french drain was used only for condensate discharge purposes. Hazardous or radioactive materials are not known or suspected to have been disposed of at TSF-36. A 1993 field inspection did not reveal any stained or discolored soils, and field screening did not detect any organics or radionuclides. The results of soil sample analyses taken from the sump base detected only 6.5 pCi/g of cesium-137. A risk evaluation determined that this contaminant was below the 10^{-6} risk-based soil concentration for all the various exposure routes in Table 3.

- TSF-39 [Transite (Asbestos) Contamination]—TSF-39 is an area that contains small pieces of asbestos cement (transite) and is believed to be the result of the construction activities for LOFT. Field inspections have determined that the asbestos material is encapsulated in cement and is not likely to be released.

  Hazardous or radioactive materials are not known or suspected to have been disposed of at TSF-39. Field inspections and field screening of the debris did not reveal the presence of any organic or radioactive contamination.

Wastewater Disposal Sites

The following three low probability hazardous sites are classified as wastewater disposal sites because they have been used to receive liquid waste discharges from the TAN area facilities. The subsequent evaluation process has determined that none of the siteshas received any hazardous or radioactive wastes and that any potential contaminants discharged to the sites have either been neutralized, biodegraded, or do not pose an unacceptable risk to human health or the environment.

- WRRTF-02 [Two-Phase Pond (TAN-763)]—WRRTF-02 is an unlined surface impoundment that had previously received waste from only the Two-Phase Loop experiments. These experiments occurred from 1979 to 1985, and the effluent to the pond consisted of primarily steam condensate and process wastewater potentially containing demineralization or corrosion-inhibiting solutions.

  No hazardous or radioactive contaminants are known to have been discharged to the pond. Review of engineering drawings indicates a checkvalve in the steam system would prevent any potential contaminants from draining into the pond. Although no soil sampling was conducted, site inspections revealed no evidence of contamination, stained soil, or stressed vegetation. It is believed that any demineralization or corrosion-inhibiting solutions discharged to the pond would have been neutralized by the naturally alkaline native soils or biodegraded.

- WRRTF-03 (Evaporation Pond)—WRRTF-03 is an unlined evaporation pond used to dispose of process water and cooling water from 1983 to the present. Records indicate that minor amounts of sulfuric acid, sodium hydroxide, and hydrazine were disposed of in the pond.

  No hazardous or radioactive materials are known to have been discharged to the pond. Although no soil sampling has been conducted, records indicate that only low concentrations of inorganic contaminants were discharged to the pond. In addition, site inspections revealed no evidence of contamination, stained soil, or stressed vegetation. It is believed that any demineralization or corrosion-inhibiting solutions discharged to the pond would have been neutralized by the naturally alkaline native soils or biodegraded.

- WRRTF-06 (Sewage Lagoon)—WRRTF-06 is an unlined surface impoundment that received nonhazardous sanitary and process wastes from 1984 to the present. Records indicate that the effluent contained only low concentrations of inorganic and organic compounds.

No hazardous materials are known to have been discharged to the pond. Although no soil sampling was conducted, site inspections revealed no evidence of contamination, stained soil, or stressed vegetation. It is believed that any demineralization or corrosion-inhibiting solutions discharged to the pond would have been neutralized by the naturally alkaline native soils or biodegraded.

Public Involvement Activities

Public input is crucial to the CERCLA process, and the agencies encourage you to participate in the remedy selection process for the OU 1-07B RI/FS and the No Action sites. All of the information that supports the recommendation for OU 1-07B and the No Action sites is available for your review in the Administrative Record. Copies are also available at the INEL Information Repositories listed in the sidebar. As soon as you receive and review this plan, you are encouraged to call any of the phone numbers listed in this plan to contact representatives of the DOE, regional INEL offices, INEL Community Relations Plan office, State of Idaho, or Region 10 of the EPA. You may want to ask questions, request a briefing, or seek additional background concerning this proposed plan.

Public Involvement Sessions

Displays concerning progress in the INEL Environmental Restoration Program at the INEL will be set up for viewing at each of the following locations from 10 a.m. to 9 p.m. on the date listed. Representatives from the various agencies will be available to discuss concerns and issues related to this plan from 5:30 p.m. to 9 p.m.

Verbal comments may be given on a tape recorder at the library and malls, or comments may be submitted in writing and turned in during the session or mailed in by June 17, 1994.

A public meeting will be held in conjunction with the library and mall sessions at the following locations. At 6:30 p.m. there will be a presentation by the agencies, followed by a question and answer session, and an opportunity to make formal public comments. **A court reporter will prepare a transcript of the public meetings, and will record public comments received.**

Idaho Falls	Boise	Moscow
Monday, June 6, 1994	Wednesday, June 8, 1994	Thursday, June 9, 1994
Grand Teton Mall	Public Library	Palouse Empire Mall
Community Room	Auditorium	*(former House of Fabrics Store)*
2300 E. 17th Street	715 S. Capitol Blvd.	1850 W. Pullman Road

Pocatello/Twin Falls

The regional INEL offices in Pocatello and Twin Falls will be offering presentations and technical briefings to the public concerning these investigations throughout the comment period. Call the offices listed on this page to make arrangements.

INEL Information Repositories

INEL Technical Library
DOE-ID Public Reading Room
1776 Science Center Drive
Idaho Falls, ID 83402
(208) 526-1185

INEL Pocatello Office
1651 Al Ricken Dr.
Pocatello, ID 83201
(208) 233-4731

INEL Twin Falls Office
233 2nd Street North, Suite B
Twin Falls, ID 83301
(208) 734-0463

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